General Question 1-ARTBA Response:

FHWA should take the lead in developing, issuing, and publishing a national policy on work zone safety. Inasmuch as work zone safety is a crosscutting issue within the jurisdiction of other federal agencies, FHWA should coordinate the policy, to the extent possible, to ensure it is cohesive and coherent across the federal spectrum. ARTBA strongly recommends that FHWA develop its policy in concert with the Occupational Safety & Health Administration (OSHA), the National Institute for Occupational Safety & Health (NIOSH), the Federal Motor Carrier Safety Administration (FMCSA), and the National Highway Traffic Safety Administration (NHTSA), as well as other relevant agencies.

The policy should be comprehensive, and therefore would contain broad guidance, articulated in a policy document(s), as well as specific regulations implemented through appropriate rulemaking within the respective agencies of jurisdiction.

ARTBA would be strongly opposed to a work zone policy that is enacted unilaterally by FHWA. ARTBA believes that such an action would likely result in conflicts and confusion among federal agencies and the regulated community.
2)ARTBA Response:

The current regulations are not adequate to meet the safety and mobility needs of road construction and maintenance projects. While the existing regulation provides adequate requirements for traffic control plans, other aspects of the regulations are broad and vague. These ambiguities render much of the regulation virtually unenforceable.

The industry would benefit by clearer, more comprehensive standards to provide uniformity throughout the country on high hazard issues such as:
a. Entry and exit procedures for supply vehicles (dump trucks) between the traffic space and work space
b. Staging of equipment and vehicles to provide barriers to traffic and noise
c. Requirements for traffic control and pedestrian movement within the work area of the work zone
d. Training and competencies of key personnel dealing with issues such as traffic control devices, flaggers, work zone design, and traffic flow
3)ARTBA Response:

Clearly, there must be some means to distinguish between the type of work being performed and the comprehensiveness and complexity of regulations covering that work. That is not to say that some types of work are to be exempted, however.

ARTBA recommends a regulatory framework, best demonstrated by a matrix. For example, a long-term project in a high speed, high traffic volume roadway should be subject to more regulation than a short-term project on a rural roadway. If however, that rural roadway has geometry that makes it dangerous, experiences high volumes of traffic during certain times of day, is subject to dangers during night time hours or inclimate weather, etc. then more strict regulations should apply.

In other words, ARTBA recommends a regulatory framework that cross compares the type roadway (high speed, limited access, urban, rural, two lane, etc.) with the type of work and conditions (long-term, short-term utility, weather conditions, time of day, hazard history of roadway, etc.) Based upon the cross-compared factors, the regulated community can determine the complexity and comprehensiveness of the regulation for protecting workers and motorists during that operation.

4)ARTBA Response:

It is highly unrealistic to believe that states and local jurisdictions can improve record keeping and reporting of numbers, size, duration, incidents, injuries and fatalities related to work zones while there is not a common, national definition.

It is important for FHWA to take the lead in developing such a definition, in cooperation with other affected public and private organizations.

In ARTBA's experience, the best, simplest way to define a work zone is to limit it to the area between the first advanced warning sign (as required in the MUTCD—not necessarily ITS-type traffic notification signs) and the last "End Construction" sign. This is the "work zone." In our experience, most definitional problems arise when talking about incidents related to the work zone, such as traffic cues that sometimes stack before the advanced warning sign.

In ARTBA's opinion, reporting forms should have two questions: 1) Did the incident take place "within" a work zone? 2) Was the incident related to work activity in the work zone? In using this approach, we will be able to determine if the work zone activity was related to the reported incident. ARTBA anticipates that there are incidents within a work zone that are unrelated to the construction work, as well as incidents outside the work zone that are related to construction work inside the zone. ARTBA believes that a basic, easy to understand definition, with questions related to that definition would solve many of the ambiguities surrounding work zone definitions and related reporting issues.

5)ARTBA Response:

The impact on the users due to road construction must be balanced against the need for additional capacity at present, for the duration of the transportation plan, and for the projected future, along with the operating efficiency of the roadway system for those same time periods.

ARTBA believes that simply weighing the road user impact during construction and maintenance operations, without considering short- and long-term operations and capacity needs, will result in a flawed analysis.

The only bearing user impacts should have on immediate construction and maintenance operations (once the need for such programs are established in the transportation plan) should deal with traffic control and/or diversion around the projects.

6)ARTBA Response:

This question must be answered in context with the facility location and demographics. It may be very difficult to develop a regulation to cover this body of issues, given the variety in roadway construction and maintenance projects.

On facilities such as those that carry a large amount of traffic, serve as critical regional links in the network, or are located in areas that make construction expensive and difficult, it is important to consider costs related user impact, life-cycle, duration of materials, etc. If a jurisdiction is considering bridge or major arterial replacements or renovations, then it is important minimize impacts overtime, and consider 50-year+ life cycles.

In regions where there are alternative routes for diversion or volumes that can withstand more frequent maintenance and renovation, then extended life-cycle planning may not be so critical.

Another important factor to consider in this planning process are the safety risks to motorists and workers. There may be roadways that, while their location or volumes do not necessarily lead to longer life-cycle engineering and materials, they may pose safety threats to workers and/or motorists during construction, maintenance or renovation. The safety/risk factor is an important consideration in the planning process.

In all instances, when new construction or facility renovation is being undertaken, planners and officials should consider the maintenance and renovation needs that will arise during use and at the end of the planned life cycle. Safety and traffic management concerns should be fixed during present operations so that unnecessary unsafe, inconvenient, and expensive repairs and renovations can be avoided during the next maintenance and renovation stages.

7)ARTBA Response:

There are several evaluation instruments available for making such determinations, including measurements and estimations for life-cycle costing, average daily traffic (ADT), motorist delay (QuickZone), traffic speeds, and queuing sensors.

ARTBA is unaware of an established (recognized) method for measuring a jurisdiction's incident (accident) experience on a certain portion of roadway. As noted previous, accurate safety data would be an important piece of information in the transportation planning process.

8)ARTBA Response:

While ARTBA is opposed to extended processes and procedures that would further delay needed construction and maintenance projects, the association does believe that earlier "constructability" reviews at the design stage would allow more segments of the industry to provide feedback to ensure that projects are able to move forward with minimal delays. A regulation that encouraged involvement of the construction segment of the industry during the planning process could alleviate many delays causes by safety concerns, project sequencing, and ease of construction. Because the industry still relies heavily on the "low bid" system for competitive pricing, early involvement by the construction industry may take place through local, state and national trade associations who do not stand to benefit from pre-bid information that will constrain competitive contractors.

Once the agency has made a determination for incorporating the relevant design, strategies and practices during the planning process, they should be required to justify their decisions through a report available to the public for review.

9)ARTBA Response:

In a "macro" sense, user cost may be one of many considerations when designing and implementing work zones, but it should not be the predominant factor; nor should excessive time and money be allocated for determining this impact.

There are other considerations that ARTBA believes need more weighty consideration, including direct project costs, project duration, worker & motorist safety, congestion and delay. Since the user costs are not borne directly by the developing agency, and the users are the ones who benefit from

an improved facility, ARTBA believes that this issue is not one of the more important considerations, in most cases.

There may be some rare instances, when a roadway is adjacent to a business facility that requires minimal delay on the roadways, where the user cost may be more relevant. In these instances, the cost should be handled on a case-by-case basis, and not through federal regulations.

10)ARTBA Response:

Utility companies should be involved very early in the planning phases of roadway construction, maintenance and renovation, and should be viewed as partners on the project. By informing and involving the utilities early in the program, they may be able to synchronize their planning process to the construction process, and both will realize gains through a coordinated program.

In some instances, where a roadway construction project may be moving forward in advance of the utility's planned program, the transportation agency may consider providing loans or other forms of financial assistance to allow the utility to conduct its work in conjunction with the project, thereby avoiding later delays or utility cuts through new roadways.

11)ARTBA Response:

ARTBA believes it is important for work zone TCP's to include elements of public communications and outreach—including real-time information, review and revision (if necessary) of the effectiveness of the TCP, and a means to enforce traffic management in the TCP. The level of detail and the complexity of the expanded should be commensurate with the duration and location of the work.

In many instances of short-term work, work zone signage and traffic control as demonstrated in the MUTCD will be adequate. In other situations, where there are high-traffic volumes, a lot of non-local traffic, etc., it is important to have dynamic information, public outreach efforts, and constant review and revisions to the TCP to ensure that it is using the best means reasonable to manage the traffic through the work zone.

Additionally, traffic control planning should be broadened to ensure that work safety and protection is considered when determining the geometry and traffic control devices to ensure that they are protected to the maximum extent reasonable. In this instance, ARTBA recommends that FHWA consider a hierarchy of traffic controls for worker protection, including (in order of protection) total closure, protective barrier, channelizing barrier, drums, cones and tubular devices.

To the extent feasible, clear regulations should be adopted outlining procedures for clear removal of old pavement markings and placement of new markings to safety guide motorists though the work zones.

12)ARTBA Response:

When appropriate, the TCP should address security aspects, not only of critical transportation infrastructure and linkages, but also concerns of nearby offices, installations, military bases, government facilities, etc. that may be critical to national security.

In this regard, aspects of construction should not only be concerned with security, but also with pubic safety, such as construction on critical facilities during hurricane season in the East Coast and Gulf states.

Commensurate with the need of the roadway and/or the adjacent facilities, TCPs should have contingency plans to modify construction activities and allow traffic to move through the work zone expeditiously if needed.
13)ARTBA Response:

In urban areas where the duration of the project is more than two-days, the TCP should provide for safe and convenience passage for pedestrians, cyclists, or other non-motorist transportation needs in line with ADA requirements for permanent facilities.

In all circumstances, worker garment visibility regulations should be upgraded to be in line with industry standards for conspicuity, ensuring that workers are clearly visible to motorists and equipment operators.

Because of the dangers in work zones caused by changed roadway geometry, non-permanent signage, possible hazards from uneven surface conditions, and changing traffic patterns, FHWA should consider more stringent standards for maintenance and levels of retroreflectvity on signs, barriers, channelizing devices and pavement markings.
14)ARTBA Response:

In many cases, the development of the TCP should be a collaborative process between the designer, the owner/agency, and the constructor. Each of these parties has a unique perspective on how and why the TCP should be developed, including the strength of the design and sequencing of work, the impact on the motoring public and the constructability and schedule of the plan.

As noted previously, on a "low-bid" project, an association, consultant, or non-bidding contractor may represent the contractor group, as the TCP is often developed before the bid stage. Another approach would be to negotiate the TCP after the contract is awarded.

Certification of TCP designers would not be necessary if a consultative process were to be used. Some type of certification or "competent person" requirements may be useful for large, high-visibility, high-cost, high-volume projects. For liability reasons, many ARTBA members have expressed concerns that they are often reluctant to change a TCP, once developed by the government agency, for liability reasons. There are precedents where the contractor has been made liable for accidents occurring in a work zone when the contractor, in good faith, sought and received a modification to the TCP. In other instances, compliance with a government-prescribed TCP has served as a shield from liability. In order for the industry to collaborate—and as a result develop better TCPs—the regulations will have to address the liability issue for participating, private sector parties.
15)ARTBA Response:

Yes. The frequency and depth of the audit, however, should be linked to the hazardous nature of the project. For any project, regular and frequent audits of the traffic control devices should be conducted. If a person is competent (and this regulation should determine what "competent" means), the constructor need not have "3rd party" or "independent" audits. A competent person on staff should be able to conduct the audit.

This audit procedure should be developed through, or in conjunction with the TCP.
16)ARTBA Response:

As with our response to other aspects of this ANPRM, the level and detail of a public awareness program is dependent on the impact, size and duration of the project. For those large, long-term, and/or high hazard projects, public communication and outreach should begin while the project is in the design phase to ensure that the public is familiar with the project and its impact on their daily lives.

As the project progresses, it will be up to different parties to communicate to the public, depending on the activity. For those long-term projects, it should be the owner/government's responsibility to provide an overall public communications project, as they will be the only party involved from beginning to end.

During certain construction phases, where the contractor has control over day-to-day operations, that company will be better positioned to provide real-time public communications through changeable message boards and signage concerning changes, delays, etc.

Funding for these communication programs must be clearly defined and published in the contract documents.

In most cases, the communications program should be a coordinated effort between all parties involved in the project.
17)ARTBA Response:

Yes. The plan should contain 1) the phases of the public communications program, 2) a coordinated message for each phase, 3) the party responsible for conducting the program at each phase, 4) a process for modifying the program, and 5) a crisis communications component for unforeseen instances.
18)ARTBA Response:

It would be useful for FHWA—or another national organization—to provide a platform where all the statistics noted in the ANPRM, plus relevant accident/incident data, to be reported, compiled and sorted in a standardized format. Such a program would enable interested parties to know how roadway construction programs will impact them, their families and their businesses.

Such information would be very useful to track successful programs, potential high-hazards areas, traveler delay, industry market trends, and type of construction taking place in the various jurisdictions.

It would help motorist make better informed travel plans; help the industry to track the breadth and type of work being conducted; predict and mitigate areas where safety problems may arise; and plan for future transportation needs.
19)ARTBA Response:

For this question, ARTBA raises the response, what would FHWA do with this data? It seems that the relevant jurisdiction will know whether or not their TCP and work zone mobility efforts are working or not, depending upon these measures (delay, travel time, volumes, etc.). It seems that the local motorists and businesses will be most effective in putting pressure on the agency to improve work zone performance. We do not think FHWA or the federal government is ready to enforce a base level of compliance, and ARTBA strongly opposes restrictions on the allocation of federal funding to the states for surface transportation projects as a means to achieve compliance with other policy objectives.

It would be useful, however, to have a better, more standardized method for reporting work zone related incidents. This would help national, state, and local organizations better understand and mitigate against deaths and injuries in work zones in the future.
1)1. ARTBA Recommendation Number One (Unrelated to Questions in the ANPRM)

Unit Bid Pricing and Model Contract Specifications for Safety—To help ensure roadway construction work zones are as safe as possible, the use of unit bid pricing for safety items in all federally-funded road contracts should be required. Many contractors want to do the "right thing" ARTBA Response:

ARTBA believes that the largest problem with measures for safety is not necessarily the "categories" (crashes, fatalities and injuries), rather the inconsistency with which the data is collected. It is understandable, to some degree, that the federal government does not want to dictate to the states the manner in which they should collect data concerning incidents related to work zones. (The states are probably not too fond of such mandates either.) On the other hand, it is extremely difficult to craft national programs and assistance when we do not have a clear understanding of what is causing the incidents, nor a standardized means to collect that information.

ARTBA believes that at a minimum, FHWA should determine, though regulation, a target date for a standardized method to collect and report safety performance data on a national basis. FHWA could allow that method to be developed through a consensus proceeding (such as an AASHTO committee, or through the ARTBA/AASHTO/AGC joint committee), with a "threat" that a mandatory system will be implemented through regulation if a national consensus is not achieved by a date certain.

ARTBA believes that until we set a nationally standardized means for defining a work zone, and reporting incidents related to work zones, it will be difficult to reduce crashes, fatalities and injuries, and mitigate the costs associated with them, at a national level.
and set up the safest work zone feasible. Nevertheless, the increased safety measures cost money to buy, set-up properly and maintain. In the low bid contract award system used in the vast majority of roadway construction projects, the conscientious contractor is likely to be underbid by one who has less regard for worker and motorist safety. ARTBA recommends that model contract specifications, special orders, and unit pricing for safety items be developed and included in federally supported roadway construction contracts. This will level the playing field for those contractors who place a high priority on safety.

The concept of "owner involvement" in all aspects of safety is an old idea in other areas of construction. Once owner involvement and commitment are well established, safety practices such as contract specifications and unit bid pricing can save the owner (DOT) a significant amount of money.

A commonly referenced report by the Business Roundtable Report, backs this assertion with substantial research. The report A-3, "Improving Construction Safety Performance: A Construction Industry Cost Effectiveness Project Report" (1982, Reprinted 1991), makes the following observations: "The primary purpose (of the A-3) report is to demonstrate that owners have, in addition to their moral commitment, an economic incentive to help reduce the number of accidents that occur on their construction projects." The report goes on to say that reasonable reductions in frequency and severity (of accidents) would lower construction project costs by as much as 8% of construction labor payroll.

Some of the specific recommendations include:

- Provide safety & health guidelines the contractor must follow;
- Require use of permit systems for potentially hazardous activities;
- Require the contractor to designate a responsible supervisor to coordinate safety on the site;
- Discuss safety at owner-contractor meetings;
- Conduct safety audits during construction;
- Require prompt reporting and full investigation of accidents;
- Encourage training.

2. ARTBA Recommendation Number Two (Unrelated to Questions in the ANPRM)

Contractor Incentive Programs—ARTBA believes that incentive programs are an effective means to encourage improved safety and health performance on a job site. FHWA should create special provisions for incorporation into all federally supported roadway construction projects that provide economic rewards for contractors who meet specified performance measures related to both traffic and worker safety and health.

The extra planning that is required to implement a good safety and health program can result in better over-all project planning, thereby creating better-organized and efficient projects. In time, by encouraging contractors to plan and work more safely, the industry standard can be raised to a new level that will not only improve the health and safety of workers and motorists, but also lead to increased project savings.